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| **Joint Collaborative Team on Video Coding (JCT-VC)**  **of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11**  14th Meeting: Vienna, AT, 25 July – 2 Aug. 2013 | Document: JCTVC-N0382 |

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| --- | --- | --- | --- |
| *Title:* | **Non-RCE3: Cross-check of JCTVC-N0256 (Intra MC with 2D MVs) on Table 17 and Table 18** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Information | | |
| *Author(s) or Contact(s):* | Xian Wang  Zhan Ma  Huawei Technologies (USA) 2330 Central Expressway Santa Clara, CA 95050 USA | Email:  Tel:  Email: Tel: | [xian.w@huawei.com](mailto:xian.w@huawei.com)  +1 408 330 4440 [zhan.ma@huawei.com](mailto:zhan.ma@huawei.com)  +1 408 330 5142 |
| *Source:* | Huawei Technologies (USA) | | |

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# Abstract

This contribution reports the crosscheck results performed by Huawei on part of JCTVC-N0256 (Table 17 and Table 18). The verification tests were carried out using the test sequences and conditions specified in JCTVC-M1123. Our test results matched, in terms of bitrates and PSNR, those presented in the contribution documents.

# Description

JCTVC-N0256 proposes an intra motion compensation method, which can support 2-D motion vectors, while current RCE3 uses 1-D motion vector binarized with fixed length. 2-D motion vectors can align with HEVC inter method better, and 2-D motion vectors are binarized with an exponential-Golomb code.

# Results

The test conditions for RCE3 as specified in JCTVC-M1123 were used in the verification tests. The simulations were run on a 64-bit Windows cluster. Our results matched, in terms of bitrate and PSNR, those reported by the proponents. The complete crosscheck results are provided in the accompanying spreadsheets.

This crosscheck corresponds to 3.4 Performance of Motion Vector Predictor in JCTVC-N0256 (Table 17 and Table 18). Based on the request from the proponent, the accompanying spreadsheets only crosscheck the method 2(the reference part) in the spreadsheets.

Below shows the summary of the test results.

## Lossless results

Table 1 Results of cross-check of N0256 for lossless coding(Table 17)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra Main** | | | **Random Access Main** | | | **Low delay B Main** | | |
|  | **compression ratio** | | Bit-rate saving | **compression ratio** | | Bit-rate saving | **compression ratio** | | Bit-rate saving |
|  | Reference | Tested | Reference | Tested | Reference | Tested |
| Class F | 5.5 | 5.5 | -0.3% | 34 | 34.4 | -0.4% | 52.8 | 53.4 | -0.4% |
| Class B | 2.2 | 2.2 | 0.0% | 2.6 | 2.6 | 0.0% | 2.6 | 2.6 | 0.0% |
| SC RGB 444 | 15 | 15.1 | -0.5% | 151.4 | 152.6 | -0.4% | 577.2 | 581.4 | -0.3% |
| SC YUV 444 | 18.2 | 18.5 | -0.7% | 205.3 | 207 | -0.4% | 545.1 | 558.6 | -0.9% |
| RangeExt | 2.4 | 2.4 | 0.0% | 2.5 | 2.5 | 0.0% | 2.5 | 2.5 | 0.0% |
| Enc Time[%] | 104% | | | 110% | | | 101% | | |
| Dec Time[%] | 81% | | | 88% | | | 89% | | |

## Lossy results

Table Results of cross-check of N0256 for lossy coding(Table 18)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **All Intra HE Main-tier** | | | **All Intra HE High-tier** | | | **All Intra HE Super-High-tier** | | |
|  | Y | U | V | Y | U | V | Y | U | V |
| Class F | -1.1% | -1.0% | -1.1% | -0.8% | -0.8% | -0.8% | -0.6% | -0.6% | -0.7% |
| Class B | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | 0.0% | 0.0% | 0.0% |
| SC RGB 444 | -2.7% | -2.8% | -2.8% | -2.5% | -2.5% | -2.5% | -2.3% | -2.3% | -2.3% |
| SC YUV 444 | -2.2% | -2.3% | -2.3% | -1.8% | -1.9% | -1.8% | -1.5% | -1.5% | -1.4% |
| RangeExt | -0.1% | -0.1% | -0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Enc Time[%] | 113% | | | 112% | | | 112% | | |
| Dec Time[%] | 89% | | | 88% | | | 87% | | |
|  |  |  |  |  |  |  |  |  |  |
|  | **Random Access HE Main-tier** | | | **Random Access HE High-tier** | | |  |  |  |
|  | Y | U | V | Y | U | V |  |  |  |
| Class F | -0.9% | -0.9% | -1.0% | -0.7% | -0.8% | -0.8% |  |  |  |
| Class B | 0.0% | -0.1% | 0.0% | 0.0% | -0.1% | 0.0% |  |  |  |
| SC RGB 444 | -2.2% | -2.2% | -2.2% | -1.9% | -1.9% | -1.9% |  |  |  |
| SC YUV 444 | -2.0% | -2.1% | -2.0% | -1.6% | -1.6% | -1.5% |  |  |  |
| RangeExt | -0.1% | -0.1% | -0.1% | 0.0% | 0.0% | -0.1% |  |  |  |
| Enc Time[%] | 111% | | | 111% | | |  |  |  |
| Dec Time[%] | 95% | | | 95% | | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | **Low delay B HE Main-tier** | | | **Low delay B HE High-tier** | | |  |  |  |
|  | Y | U | V | Y | U | V |  |  |  |
| Class F | -0.6% | -0.8% | 0.0% | -0.4% | -0.4% | 0.1% |  |  |  |
| Class B | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |  |  |  |
| SC RGB 444 | -1.7% | -1.6% | -1.6% | -1.8% | -1.6% | -1.6% |  |  |  |
| SC YUV 444 | -1.6% | -1.6% | -1.5% | -1.2% | -1.1% | -1.0% |  |  |  |
| RangeExt | 0.0% | 0.0% | -0.1% | 0.0% | 0.0% | -0.1% |  |  |  |
| Enc Time[%] | 111% | | | 111% | | |  |  |  |
| Dec Time[%] | 96% | | | 97% | | |  |  |  |

# Conclusions

Our verification test results confirmed the reported coding efficiency gain in JCTVC-N0256(Table 17 and Table 18).